The Faculty of Intensive Care Medicine

ICM CURRICULUM: SUPPORTING EXCELLENCE for a CCT in Intensive Care Medicine

Assessment Strategy

VERSION 1.0
4 August 2021

Change log

This document outlines the curriculum to be used by doctors completing postgraduate training in Intensive Care Medicine in the UK. It is accompanied by the ICM Curriculum: Supporting Excellence v1.0.

This is Version 1.0. As the document is updated, version numbers will be changed, and content changes noted in the table below.

Version number	Date issued	Summary of changes

Contents

1. Summary

The FICM programme of assessment encompasses the examinations, assessments in the workplace and professional judgements used to demonstrate that trainees meet the standards expected of them at each stage of training, eventually leading to a Certificate of Completion of Training (CCT).

The focus of the assessment strategy is to ensure that trainees are able to demonstrate to the GMC that they can provide the public with safe and effective care that meets population needs throughout the nations of the United Kingdom. There is an emphasis on excellence in training and teaching throughout, with use of assessment to facilitate learning. Assessment should be carried out in a fair and consistent manner with equal access to the assessments available to all trainees.

This programme of assessment is embedded within an **outcome-based curriculum** as required by the standards set out in the GMC document, 'Excellence by design: standards for postgraduate curricula' (General Medical Council, 2017c). Fourteen **High-Level Learning Outcomes (HiLLOs)** indicate discrete areas of practice within Intensive Care Medicine (ICM). **Key capabilities** within each HiLLO provide guidance for trainers and trainees on how to demonstrate performance within each of these areas of practice.

Flexibility in training is an increasingly recognised area of importance and has been considered carefully in compiling this assessment strategy. Whilst specialty training within the United Kingdom is complex, it is recognised that there is significant overlap between specialties both in terms of general skills and shared specialty-specific skills. By highlighting these areas of commonality between curricula via **Generic Professional Capabilities (GPCs)** there lies opportunity to increase flexibility for trainees to move between specialties and to improve understanding between specialties (General Medical Council, 2017a).

Assessments within the programme have been carefully considered to ensure that they are valid, that is, each test has a clear purpose that is appropriate to the capability being demonstrated, and that the evidence base to support the choice of assessment methodology has been critically reviewed. Additionally, the assessment burden has been reduced where possible.

The Faculty have made a purposeful move away from the 'tick-box' culture associated with workplace-based assessments alongside the shift from a competency-based to an outcomes-based curriculum. It is more clear what purpose assessments within the workplace serve within the overall assessment strategy, including how feedback from assessments contributes to decisions regarding progression of training.

Use of formative assessments (Supervised Learning Events) in the workplace, with a focus on trainee-trainer discussion and reflection to guide learning in clinical scenarios, has been encouraged to improve the validity and acceptability of these tools for trainers and trainees. It is hoped these changes will drive excellence in assessment and emphasise the value of input and guidance from senior clinicians.

Where summative assessments or judgements are required for progression, for example at written examinations, multisource feedback assessment, or at the Annual Review of Competency Progression (ARCP), this has been highlighted within the assessment strategy. It is clearer how each assessment contributes to progression at these key points in the new programme of assessment, and the recommended course of action if these criteria are not met.

Educational Supervisors will collate evidence from multiple sources to make overall judgements as to a trainee's level of capability and therefore their devolved responsibilities and required level of supervision. This judgement is recorded via a capability level scored for each HiLLO via the ePortfolio. This helps to ensure trainees have the appropriate skills and level of supervision at each stage of training and thereby embeds prioritisation of public safety within the programme of assessment.

2. Aims of the Assessment Strategy

- The FICM Programme of Assessment should allow learners to demonstrate they have met the outcomes from the curriculum in a way that is fair and reproducible using methods that both trainees and trainers find useful and practical and that considers the available educational evidence base.

- It should prioritise patient safety whilst at the same time encourage excellence in training and professional performance; assessment is a useful tool for learning not just for proof of learning.

    - **Formative** assessments will be used as a tool to promote learning and encourage excellence.

    - **Summative** assessments and judgements will make clear the scope of performance and capabilities trainees have. This will ensure their skills reflect their level of clinical responsibility and maintain patient safety.

- Whilst it must be clear how each HiLLO has been assessed, there should be no unnecessary repetition of assessments with the overall burden of assessment being reduced whilst maintaining proportionality.

- Where there are key progression points in training, for example between stages of training, judgements based on triangulation of evidence from a number of sources should be used to show trainees have demonstrated suitable capability for their level of training. This protects patients and ensures trainees are assessed fairly. Trainees should know what is expected of them at these key progression points.

3. The Programme of Assessment

The programme of assessment uses a variety of assessment tools to support trainees in ensuring they acquire and can demonstrate the knowledge, skills and attitudes required to meet the standard required to achieve a Certificate of Completion of Training and thereby be eligible for entry onto the General Medical Council's Specialist Register as an Intensive Care Medicine Specialist.

Triangulating feedback from multiple types of assessment methodology informs a more reliable judgement of a trainee's performance (Parry-Smith et al., 2014) and layers of assessment tools (for example incorporating the trainee portfolio) increase validity of this judgement (Challis, 1999). Triangulation of data from multiple sources when reviewed and discussed (for example at Educational Supervisor (ES) or Clinical Supervisor (CS) meetings) can reliably identify patterns of performance across tasks and contexts, including identifying outlying aspects of performance (Van Der Vleuten and Schuwirth, 2005).

The FICM assessment strategy uses this evidence-based principle of triangulating data from multiple assessment methodologies and multiple assessors, to provide an 'integrative judgement' (Govaerts and van der Vleuten, 2013) on the overall level of performance of the trainee at ES and CS meetings and at the ARCP.

The assessment blueprint indicates to trainers and trainees clearly, which assessment tools are appropriate to demonstrate each HiLLO (see Appendix). This blueprint considers the merits of each assessment tool and the level to which trainees are expected to demonstrate this knowledge. This is demonstrated by Miller's pyramid below (Miller, 1990). It also considers how knowledge, skills and attitudinal components of performance may be best demonstrated using the various workplace assessments. This is discussed in more detail in the 'Assessments in the Workplace' section.

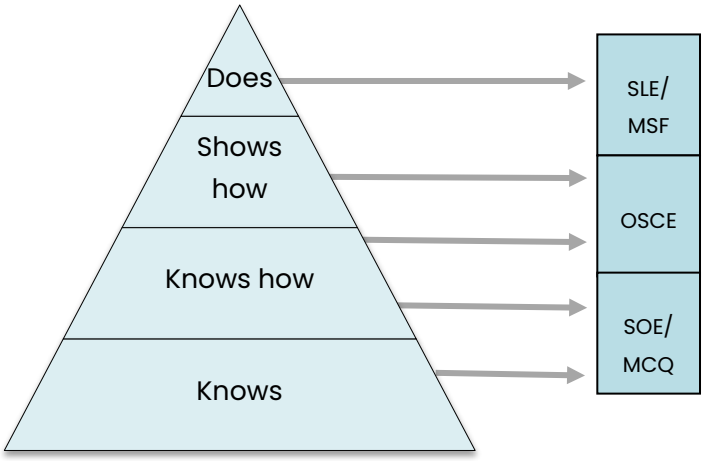

Figure 1. Miller's pyramid (adapted to include FICM assessment methods) showing how trainees can use assessments to demonstrate levels of performance

SLE: Supervised Learning Event, MSF: Multi-source feedback, OSCE: Objective Structured Clinical Examination, SOE: Structured Oral Examination

Written examinations and structured oral examinations are used to demonstrate the breadth of what trainees should 'know' and 'know how' to do within the curriculum. OSCE examinations allow trainees to demonstrate increased depth of learning and practical skills, 'shows how'. These assessments do not necessitate observation in the clinical environment and can therefore simulate management of rare or life-threatening situations and can be standardised. Supervised learning events allow trainees to demonstrate the mastery of clinical practice, 'does', within the complexities of the clinical environment, but with limitations in numbers and predictability of clinical encounters witnessed.

3.1. Capability level descriptors

The Faculty recognise an increased emphasis on Entrustable Professional Activities (EPAs) within postgraduate medical education in the UK. EPAs represent an evaluation of a trainee's capability to perform within a defined area of practice and supervision and have recently been trialled by the Royal College of Physicians, Royal College of Emergency Medicine and Royal College of Paediatrics and Child Heath (Ten Cate, 2005; Academy of Medical Royal Colleges, 2016; General Medical Council, 2017b; Patel and Baker, 2018; RCPCH, 2018).

Whilst the Faculty recognise the value of EPAs, rather than introducing a new assessment we have further developed the existing use of capability levels (formerly competence levels) to define the level of capability required for progression within each area of practice at the three stages of the ICM programme. It is felt that this similarly defines when entrustment decisions are made. The addition of discrete EPA assessments was considered in the development of this strategy but was felt to duplicate judgements of trust made by the Educational Supervisors using capability levels. It was decided that this would introduce unnecessary additional assessments within the overall programme of assessment. This process of defining capability levels will be further evaluated following implementation of the new curriculum.

Clarification of the expected capability levels for each stage of training levels allows trainees to know what level of performance is expected of them and what level of supervision is required within specific areas of practice as trainees progress through training. It is a core component of the assessment strategy and the target capability levels for each stage of training are detailed in the Appendix of this document.

Each capability level has construct-aligned descriptors; narrative scales guide trainees and trainers as to the level of capability expected. These are anchored to real world practice and suggest the degree of entrustability associated with each level (e.g. requiring direct supervision through to independent practice) – see Table 1.

A construct-aligned method, compared to training-level linked anchors or abstract descriptors (such as 'meets level expected for completion of higher training' or 'excellent'), is more practically useful in describing levels of supervision required. It has also been shown to improve assessor discrimination between levels of performance and agreement between assessors when used for workplace assessments (Crossley et al., 2011). Increasing discrimination and reproducibility is likely to result in an increase in the overall reliability of the capability judgements made.

Level	Task orientated capability	Knowledge orientated capability	Patient management capability
1	Performs task under direct supervision.	Very limited knowledge; requires considerable guidance to solve a problem within the area.	Can take history, examine and arrange investigations for straightforward case (limited differential diagnosis). Can initiate emergency management and continue a management plan, recognising acute divergences from the plan. Will need help to deal with these.
2	Performs task in straightforward circumstances, requires help for more difficult situations. Understands indications and complications of task.	Sound basic knowledge; requires some guidance to solve a problem within the area. Will have knowledge of appropriate guidelines and protocols.	Can take history, examine and arrange investigations in a more complicated case. Can initiate emergency management. In a straightforward case, can plan management and manage any divergences in short term. Will need help with more complicated cases.
3	Performs task in most circumstances, will need some guidance in complex situations. Can manage most complications, has a good understanding of contraindications and alternatives.	Advanced knowledge and understanding; only requires occasional advice and assistance to solve a problem. Will be able to assess evidence critically.	Can take history, examine and arrange investigations in a more complex case in a focused manner. Can initiate emergency management. In a most cases, can plan management and manage any divergences. May need specialist help for some cases.
4	Independent (consultant) practice.	Expert level of knowledge.	Specialist.

Table 1 - Capability level descriptors with construct-aligned anchors

As discussed previously, triangulating feedback from multiple assessors and assessment sources allows trainers to form reliable integrative judgements relating to a trainee's performance. These judgements are applied at Educational and Clinical Supervisor meetings to consider to what level trainees are performing within each HiLLO.

Ensuring trainees are performing at the required capability levels before allowing progression through each stage of training means that trainers and trainees are aware of the level of performance, and therefore supervision, required at each stage of training.

Completion of each stage of training confers an increased level of trust and responsibility in specific areas of Intensive Care Medicine and therefore a decreased level of direct supervision within these areas. This is reflected in the requirement for achievement of higher capability levels as trainees progress through training and become more independent (see Appendix for details of expected capability levels for stage of training).

However, completion of training does not mandate independent or expert practice in all areas of Intensive Care Medicine. It would not be expected, for example, for trainees on completion of the training programme and having been awarded a CCT to be able to care for paediatric patients independently to an expert level. They would only be expected to provide life-preserving support until expert advice or help became available.

3.2. Progression and the Programme of Assessment

The FICM programme of assessment blueprint (Table 2) summarises the assessments that are required for trainees to transition through the three main progression points (from Stage 1 to Stage 2, from Stage 2 to Stage 3, and from Stage 3 to completion of training). The target capability levels for stage of training (Appendix) should be used alongside this to ensure the level of capability and entrustment within each area (as judged by the Educational Supervisor and ARCP panel) is sufficient to allow progression to the next stage of training. The programme of assessment is designed based on the programmatic assessment model as described by Van Der Vleuten et al. (2012, 2015).

3.3. FICM Programme of Assessment

<table>
<tr><th></th><th>Stage 1 (ST3/4)</th><th>Stage 2 (ST5/6)</th><th>Stage 3 (ST7)</th></tr>
<tr><td></td><td colspan="3">Supervised Learning Events (formative assessments)</td></tr>
<tr><td>CBD
Mini-CEX
DOPS
ACAT</td><td colspan="3">Adequate breadth and quality of assessments must be conducted to allow trainers to make valid judgements of the doctor's performance across all areas of the curriculum (see the Assessment blueprint).
The focus should be on the quality of feedback and evidence of learning from the assessment. The emphasis is on the quality of assessment rather than numbers, and incorporating feedback from multiple assessors. Not pass/fail.</td></tr>
<tr><td>MSF</td><td>1 per year</td><td>1 per year</td><td>1 per year</td></tr>
<tr><td></td><td colspan="3">Assessments of Performance (summative assessments)</td></tr>
<tr><td></td><td colspan="3">Satisfactory completion of these assessments as judged by Educational Supervisor is compulsory to allow progression</td></tr>
<tr><td></td><td colspan="3">End of Stage Training Certificates</td></tr>
<tr><td>Training Certificates</td><td>Stage 1 Training Certificate</td><td>Stage 2 Training Certificate</td><td>Stage 3 Training Certificate</td></tr>
<tr><td></td><td colspan="3">Examinations</td></tr>
<tr><td>FFICM MCQ</td><td></td><td>Required for progression</td><td rowspan="2"></td></tr>
<tr><td>FFICM OSCE/SOE</td><td></td><td>Required for progression</td></tr>
<tr><td></td><td colspan="3">Capability levels</td></tr>
<tr><td></td><td colspan="3">Doctors must have met the required capability levels for each HiLLO for stage of training as indicated by the capability blueprint (see the 9.4 in the Appendix) and evaluated by ES to progress to the next stage of training or to the award of CCT. Educational Supervisors will not be able to complete these without sufficient evidence (e.g. adequate numbers, variety and quality of SLEs, a diverse educational portfolio and logbook of procedures). For doctors who are mid-stage, then the requirement is to demonstrate engagement with spiral learning and progression in all the HiLLOs, without necessarily reaching the required capability level for the end of stage.</td></tr>
<tr><td>Capabilities (see blueprint)</td><td>Meets requirements for stage of training</td><td>Meets requirements for stage of training</td><td>Meets requirements for stage of training</td></tr>
<tr><td></td><td colspan="3">Other Requirements for progression / ARCP</td></tr>
<tr><td>Procedures log</td><td colspan="3">A logbook of procedures performed relevant to stage of training and experience is required for each year of training</td></tr>
<tr><td>ES Structured Report</td><td colspan="3">Satisfactory report for each year of training required for progression</td></tr>
<tr><td>ES/CS End of Placement Reports</td><td colspan="3">Satisfactory End of Placement Report for each ICM Programme Placement during the year</td></tr>
</table>

NB: Specific Statutory Education Bodies (SEBs) may require additional evidence, such as Form R

3.4. Assessments within complementary specialties or special skills years

Guidance from the programme of assessment relates to years during ICM training within an ICM placement. Assessment guidance for special skills years forms an integral part of each Special Skills requirements as approved by the General Medical Council and is detailed in the ICM Curriculum: Supporting Excellence. See also, Special Skills Modules: Assessment Blueprint in the Appendix of this document.

Assessment of trainees undertaking placements in the complementary specialties of Internal Medicine and Anaesthesia will align to that of trainees undertaking Year 1 of training in that specialty. The programme of assessment and the ARCP requirements for an ICM trainee will be matched to that of a Year 1 trainee in that specialty. Where specific assessments are not available (for example due to differing access to ePortfolios) trainees and trainers may demonstrate flexibility in how the outcome is demonstrated, for example, by using the assessments available via the ICM ePortfolio.

4. Assessments in the workplace

4.1. Background

Assessments in the workplace were first introduced in the UK alongside the Modernising of Medical Careers reform and implemented within the new Foundation and Specialty Programmes in 2005 and 2007 respectively. At this time, competency-based curricula became established within UK postgraduate medical education.

Competency-based curricula were perceived to protect the public, reduce subjectivity and maintain standards at a time where recent failings of self-regulation within the medical profession had been exposed. Detailed and structured checklists were thought to reduce supervisor subjectivity and create standardisation (reliability) and were thus introduced for use during observed assessments in the workplace. This was a fundamental change from the 'apprentice' model of training that preceded it, which used holistic judgements from supervisors (Van Der Vleuten, 1996).

However, both trainers and trainees expressed significant concerns with the Workplace-Based Assessments (WPBAs). Sometimes described as reductionist, or 'tick box' exercises of questionable educational value, they were frequently incorrectly used and variably accepted within the clinical environment (Bindal et al., 2011). Concerns were specifically raised with the summative nature of the assessments that was felt to reduce the usefulness for learning and shifted the focus towards successfully completing the assessment.

More recent experience with these early assessments shows us that this tick-box approach standardises the test but does not necessarily ensure that the test reflects what is expected of a capable clinician in practice. That is to say, it may be statistically reliable but not necessarily valid.

There has been a move away from focusing on process level scores, or 'evidential minutiae of the subcomponents of the task', to considering the subjective judgement of overall performance by experienced (and trained) assessors. This has been shown to have increased validity (Crossley and Jolly, 2012), as well as improving acceptability in the workplace through more useful feedback (Bindal et al., 2011; Quraishi et al., 2019).

Furthermore, terminology has been standardised following GMC recommendations to differentiate between summative and formative WPBAs (General Medical Council, 2011). This encourages trainees and trainers to use formative assessments as a tool for learning (for example by trainees potentially picking more challenging cases or procedures they are less comfortable with) knowing that they are designed to stimulate learning as opposed to considering each encounter as an individual summative assessment.

Assessment for learning (formative assessment) = **Supervised Learning Event (SLE)**

Assessment of learning (summative assessment) = **Assessment of Performance (AoP)**

Figure 2. Terminology of assessments in the workplace

These changes form the rationale for the use of assessments in the workplace in their current form within the FICM programme of assessment.

4.2. Assessment tools used to demonstrate learning outcomes

Considering the change in format and focus of assessments in the workplace over time, the Faculty have implemented the current assessments taking account of more recent published evidence. This places the emphasis on demonstrating

and improving performance in practice, uncovering learning needs and providing an opportunity for feedback and reflection with a focus on trainee-trainer discussion to guide learning (Academy of Medical Royal Colleges, 2016).

Whilst it is recognised that a single assessment provides only limited evidence of a trainee's performance, multiple assessments at different times by different trainers then collectively provide a longitudinal picture of a trainee's performance (Govaerts and van der Vleuten, 2013). This can then be used to form judgements of capability as described in the Programme of Assessment section.

Construct alignment of assessments (using appropriate assessments to assess appropriate areas of practice) is important to enable valid judgements (Crossley et al., 2011). For example, the Direct Observation of Procedural Skills (DOPS) assessment is more useful for demonstrating capability in practical procedures than the Acute Care Assessment Tool (ACAT) but would not be as appropriate for assessing clinical decision-making. The assessment strategy highlights which assessments are appropriate for assessing which domains in the assessment blueprint (Appendix). Construct alignment of assessments increases the validity of the assessments and therefore judgements based upon them.

Where possible, supervised learning events (SLEs) as formative assessments are favoured over assessments of performance (summative assessments) to encourage depth of learning from experienced clinicians in the clinical environment. All assessments inform the assessment of performance that is made by the Educational Supervisor and ARCP panel.

4.3. Evidence for use

The usefulness of an assessment in medical education is commonly evaluated using a classic utility model (Van Der Vleuten, 1996). This theorises that the utility of an assessment is a product of its validity, reliability, feasibility, acceptability and educational influence.

The assessments as used by the Faculty (mini-CEX, CBD, DOPS, ACAT, MSF) are considered to be reliable and valid as tools for assessment within medicine by the Academy of Medical Royal Colleges (AoMRC) (2016) using the utility model methodology. Global judgements by trained assessors are considered reliable and valid when assessing professional performance. The literature does highlight several caveats to this however; practice must be directly observed, feedback given immediately and sufficient different observations by different observers must be collected (Schuwirth, 2004).

There has not been a review of the validity or reliability of these assessments from a psychometric viewpoint within Intensive Care Medicine. Instead this has been inferred from research within Medicine and Anaesthesia (Weller et al., 2009; Johnson et al., 2011). The feasibility and acceptability of the assessments has been considered from practical experience of their use and feedback by trainees and trainers within the Faculty since the introduction of the original curriculum in 2010.

Furthermore, whilst it is conceptually useful to consider the components of the utility model when evaluating assessments in the workplace, and this psychometric approach has been shown to work well in controlled environments such as the OSCE or written examinations, this method may not necessarily take account of the inherently variable environment in which assessments in the workplace are carried out (Govaerts and van der Vleuten, 2013).

'Calibration' of the assessment to achieve utility from a psychometric viewpoint is not always desirable. For example, it could be expected that two assessors assessing the same complex performance may have different but equally valid views on the performance considering their individual professional values, experiences and interests. This provides the trainee with a rich, contextual learning experience in practice but would however result in an assessment that performs poorly in terms of reliability when judged purely from a psychometric paradigm.

Therefore, in contrast to the FICM examinations, the Faculty have not prioritised ensuring assessments in the workplace are psychometrically validated. Instead, the focus has been to ensure the validity of each assessment is maximised by ensuring it is used within an appropriate context. This provides trainees with useful information to guide their learning and the ES with rich information with which they can form integrative judgements of clinical performance at key decision points (Schuwirth and Ash, 2013). Such an approach is evidence based and supported by scientific literature as previously described.

4.4. Reviewing assessment tools used in the Programme of Assessment

Ongoing review of the SLEs and MSF used within the programme of assessment is described in the 'Monitoring and Reviewing' section but will be used to ensure that the validity of the assessments is continually reassessed. The correlation between trainees' performance in assessments in the workplace and other measures of achievement, such as the OSCE examinations and performance at ARCP, is recorded on a yearly basis.

The Faculty are reviewing the addition of a 'Multiple Consultant Report' assessment tool to add to the evidence available to support the ES in forming accurate judgements of trainee performance. This tool has already been introduced for both surgical and medical trainees in the United Kingdom however there is at present little published evidence regarding its validity (Mukhtar et al., 2018; Hopkins et al., 2019). The tool however would allow feedback from clinicians supervising the trainee relating their performance in relation to the capability level descriptors for each HiLLO (Table 1). This tool has not yet been introduced by the Faculty, and its use will be considered based on feedback from Educational and Clinical Supervisors, in addition to a review of availability and quality of existing evidence to support judgements made at ARCP. This will occur after introduction of the curriculum and assessments as described in this document.

4.5. Numbers of assessments required and further guidance

It is recognised that trainers and trainees value guidance in terms of numbers of assessments required. However, the total number of assessments completed is less important than the quality of the assessments and breadth of cases covered. This allows Educational Supervisors to form reliable judgements of performance. Therefore, there is no 'target' number, instead the Faculty have suggested the following guidance:

- Each HiLLO must have appropriate evidence for the ES to sign off at the appropriate level for training. The assessment matrix (Appendix) highlights which forms of assessment are most appropriate for each HiLLO. This may be supplemented by other evidence such as (amongst others) development courses, teaching sessions, simulation and self-directed learning. However, where demonstration of performance in practice is required SLEs and the MSF are likely to form the highest quality of evidence upon which an ES can base their judgement.
- One assessment may be used to evidence multiple capabilities. However, it must be clear to anyone reviewing such evidence that all capabilities linked were assessed and commented upon during the assessment, and that the assessment tool used was appropriate to assess the capabilities linked.
- The ES/CS will provide guidance to individual trainees at supervisor meetings regarding the quality and breadth of assessments completed. Trainees performing well will use assessments in a creative way to demonstrate and improve their practice.
- The numbers of different types of SLE used may change as trainees progress through training. For example, stage 3 trainees may choose to use the ACAT or CBD more than the DOPS or mini-CEX reflecting that evidence of complex decision making and leadership skills may be more useful for learning than observed clinical procedures by this stage of training.
- It will be necessary to complete multiple SLEs within the same capabilities over a period of time. For example, multiple DOPS for complex procedures e.g. tracheostomy or emergency airway management would be expected to be completed by different assessors over a period of time and followed by a procedures log to demonstrate maintenance of skill. For more simple procedures this may not be required.

- The procedures log is required to evidence maintenance of complex practical skills as described above. However, there is insufficient evidence to support a required number of procedures. Instead, numbers required will depend on the training level and the circumstances of the individual trainee. For example, the ES/CS is more likely to require evidence of maintenance of advanced airway skills from trainees that are undertaking part of their training in areas where these skills are not used regularly.

4.6. CBD

The Case-Based Discussion (CBD) is intended to highlight learning within areas of clinical decision making and reasoning. Trainees should pick cases that presented challenges, doubt or difficulty to maximise the usefulness of the assessment. A review of the trainee's documentation should be carried out. Feedback should be given at the time of the case and documented contemporaneously. The CBD may also be useful for assessing more generic knowledge and skills required for practice by focussing on different aspects of a case e.g. teamwork, safety, evidence-based practice etc.

4.7. DOPS

The Direct Observation of Procedural Skill (DOPS) is an assessment of practical skills and ability. The assessor directly observes the trainee undertaking a practical procedure and assesses their performance and gives feedback directly after the event. Documentation of the encounter should include suitable context and detail for the ES or CS to establish the complexity of the case and level of supervision deemed to be required using the capability level descriptors (Table 1).

4.8. Mini-CEX

The Mini-Clinical Evaluation Exercise (mini-CEX) is used to assess a trainee's performance in clinical encounters with patients. It involves the assessor directly observing a trainee in a clinical situation e.g. admission clerking or resuscitation. It is designed to assess a variety of skills such as history taking, examination, communication skills and clinical judgement.

4.9. ACAT

The Acute Care Assessment Tool (ACAT) assesses the trainee's ability to manage a body of work over a more extended period of time, better reflecting their performance in practice. In the ICM environment, this will usually be during a rostered clinical duty period and the assessment may focus on a variety of areas including leadership, time management and prioritisation, team working and handover.

4.10. MSF

Multi-Source Feedback (MSF) allows trainees to collect feedback on performance from a variety of members of the healthcare team. It collates the judgement of assessors from different groups: peers, senior clinicians, nursing staff, allied healthcare professionals and clerical staff. These judgements are important; team-working, communication, accessibility and trustworthiness are key aspects of the practice of the Intensive Care Medicine clinician and are not assessed objectively via other assessment modalities in the same way. The MSF tool will also ask for judgements from the assessor on areas of the trainee's clinical knowledge, skills, clinical judgment, and reliability.

12-15 or more assessors are required from a representative selection and range of seniorities of the above team members to complete the MSF. This number of assessors provides a reliable assessment of communication, teamworking and trustworthiness (Norcini and Burch, 2007). The Educational Supervisor will ensure that an adequate number, and breadth of assessor background and seniority is chosen, and will review the evidence of performance. A minimum of 4 senior permanent medical staff is expected. The MSF results are anonymously presented after review by the ES, ensuring that feedback is presented in a constructive manner (Brown et al., 2014).

The MSF tool is predominantly formative, but does significantly inform the summative decisions that the Educational Supervisor and ARCP panels will be required to make each year regarding progression. The summative aspect relates to

how the overall performance of the trainee (satisfactory or unsatisfactory) is viewed by the whole of the MSF process, and whether it has been conducted in accordance with guidance on numbers and suitable respondents. Each assessor will be asked to mark the components of the MSF as being satisfactorily met or otherwise. The tool reflects the importance of adequate communication and team-working skills within the clinical environment for patient safety and triangulation of information on areas of the trainee's knowledge, skills, clinical judgement and reliability. If performance is unsatisfactory, the trainee is able to discuss areas for improvement and repeat the assessment but progression to the next stage of training is unlikely to be judged permissible by the Educational Supervisor and ARCP panel until adequate performance has been demonstrated utilising the MSF assessment.

The MSF adds value compared to judgements in these areas by clinicians only; different team members provide a different perspective on professional practice (Crossley and Jolly, 2012). Furthermore, the MSF is the only assessment in the workplace that is predictive of doctors in difficulty (Patel et al., 2016) and so a trainee encountering difficulty with this assessment should highlight to the ES that further attention is required in training and a shared action plan can then be agreed.

4.11. Contribution of assessments to key decision points (ARCP)

The MSF is a formative assessment but also contributes directly to inform the ARCP. The Supervised Learning Events (SLEs) do not contribute directly to ARCP. However, feedback from SLEs is considered when forming judgements of capability by the ES and therefore these assessments indirectly contribute to ARCP judgements.

Trainees and trainers feedback shows that they feel SLEs should contribute in some way to the decision making process at ARCP given the significant amount of effort that is taken to carefully complete the assessments, and that the assessments allow demonstration of progression over time (Cho et al., 2014).

The Faculty consider that the SLEs when used in this manner remain formative (not summative) assessments and proffer the benefits of SLEs in relation to learning in the clinical environment as previously discussed. However, because they do collectively contribute to progression decisions, they are important components of the overall assessment of the progress of trainees. This provides incentive to use the assessments appropriately but without the drawbacks of individual summative judgements (Schuwirth and Ash, 2013). This decision is, of course, a balance and the trainee's and trainer's views over time will be used to gauge the success of this process.

4.12. Roles and responsibilities of trainees and trainers

Guidance on roles and responsibilities of trainees and trainers is based on that published by the Academy of Medical Royal Colleges (2016).

Trainees have a responsibility to ensure patient safety as their first priority. Furthermore, as adult learners they are responsible for devising their own learning goals and a plan for achieving this with their ES and CS. Trainees are responsible for seeking feedback from learning events and self-reflecting on their performance to improve their own practice. Guidance is available to demonstrate how assessments in the workplace best allow them to evidence capabilities (see Appendix).

Assessors have a responsibility to ensure they are aware of their role and responsibilities. Guidance is available to all assessors detailing the rationale and procedure for conducting each assessment and clarifying their purpose as formative assessments. The assessment blueprint allows the ES / CS to ensure that trainees are using a suitable assessment tool to evidence the specified HiLLO. The capability levels use construct-aligned descriptors to anchor judgements of performance against agreed standards and to distinguish between levels of performance.

Alongside the introduction of the new curriculum, the Faculty intends to implement a system for review and monitoring of the quality of SLEs. This process is to be supported by the development of a new architecture for recording assessments (a new ePortfolio). This will allow a confidential review of SLEs that will assess whether:

i. trainers are completing assessments in the workplace appropriately (thereby ensuring validity of the assessment), and
ii. workplace assessments allow ESs and CSs to judge performance by comparing assessment feedback to the trainee's capability level as scored by the ES or CS.

Feedback from the review of SLEs can then be given, as appropriate, locally to Regional Advisors in the case of an assessor or placement being a significant outlier or to the Faculty if areas for improvement on a national level are uncovered. This process should also increase the robustness of the Faculty's processes for monitoring equality and diversity by highlighting any significant variation in SLEs between groups.

5. FICM Examinations

5.1. Introduction

The Fellowship of the Faculty of Intensive Care Medicine (FFICM) examinations are an integral part of the Faculty's programme of assessments. The FFICM examinations provide trainees in Intensive Care Medicine with the opportunity to demonstrate the required outcomes and determine satisfactory passage through training at a set critical progression point within their training programme. The examinations have been designed to enable national standards to be applied fairly to all exam candidates, irrespective of where or by whom they have been trained. Equality analysis is an integral part of policy and practice development and ensures those involved have a full understanding of how a policy or practice change may affect the fairness of our exams.

Currently, there is no part 1 (Primary) FFICM examinations programme. To be eligible to apply for the FFICM Final examinations, trainees must have passed a qualifying examination as listed on the FICM website, within ten years of the published start date of the examination sitting applied for.

A pass in the relevant examination is acceptable as an entry requirement for training in ICM as similar assessments of basic medical science are made.

The FFICM Final exams consist of an integrated programme of summative assessments, each of which tests different outcomes and competencies using validated assessment methods to test a broad-spectrum of knowledge, understanding, skills, behaviours and attitudes as defined by the Intensive Care Medicine training curriculum. Trainees are expected to be 'at the level of a pre-CCT registrar (within one year of training) who would be able to formulate a plan of care for a critically ill patient with appropriate consultant backup'. Passing the fellowship exams is a requirement of progression to stage 3 of the Intensive Care Medicine training programme and the standard is set to reflect this.

The FFICM Final examination comprises three sections: A Multiple Choice Question (MCQ) examination, an Objective Structured Clinical Examination (OSCE) and the Structured Oral Examination (SOE). Each section is marked separately and does not influence the marks in any of the other sections.

5.2. Examinations

5.2.1. The FFICM Final Multiple Choice Question (MCQ) examination

The FFICM Final MCQ currently comprises 50 Multiple True/False (MTF) questions and 50 Single Best Answer (SBA) questions in three hours. Marks are not lost for wrong answers. The faculty aim to reformat the examination to consist entirely of SBA questions that better lend themselves to testing the application of knowledge and problem solving. The process for approval of this change will occur after implementation of the new curriculum.

The MCQ examination tests factual knowledge in the areas of science applied to clinical practice, as well as clinical knowledge, understanding and decision making as outlined in the assessment blueprint (see Appendix).

5.2.2. The purpose of the FFICM Final MCQ

The FFICM Final MCQ exam is a summative assessment blueprinted to the Intensive Care Medicine curriculum, which a trainee is expected to know and understand by the end of stage 2 training. It forms a gateway exam to further detailed and focussed assessment of the application of this understanding in the FFICM Final SOE and OSCE exams. The successful MCQ candidate will have demonstrated an appropriate breadth and level of knowledge and understanding of Intensive Care Medicine and relevant basic sciences, and their relevance to practical Intensive Care and related Medicine.

5.2.3. The FFICM Final Objective Structured Clinical Examination (OSCE) examination

The FFICM Final OSCE consists of up to 13 stations, which will include one test station used for trialling additional questions for validation purposes. Neither the candidate nor the examiner knows which station is a test station and therefore all 13 stations should be approached equally. Where required, one or more rest stations may be added to allow additional candidates to be examined.

The OSCE stations include questions of varied levels of difficulty to allow candidates to demonstrate an appropriate level of competence, management and clinical skills. The examination draws questions from four different areas: data, equipment, professionalism and resuscitation. The OSCE also includes stations where the ability to communicate with patients, relatives and staff and handle ethical and administrative problems are tested. Candidates will be asked to demonstrate ICU procedures and simulation is used as part of the OSCE.

5.2.4. The purpose of the FFICM Final OSCE

The FFICM Final OSCE is a summative assessment of a candidate's professionalism, their clinical decision-making and communication skills together with applied technical knowledge of equipment, clinical monitoring and measurement used and knowledge of conditions seen in Intensive Care Medicine. The OSCE is taken together with the SOE and is blueprinted to stage 2 of the Intensive Care Medicine curriculum. A successful candidate in the OSCE will have demonstrated the clinical skills and applied technical knowledge required of a competent trainee at the end of stage 2 across multiple clinical scenarios.

The OSCE is the only component of the examination where the candidate is tested in a high stakes simulated clinical environment, including communication with simulated patients and health care professionals. The OSCE complements the FFICM SOE and the candidate is required to pass both parts before they can be awarded the FFICM by examination. These components, together with the assessment requirements as demonstrated by the programme of assessment (Table 2) are required for progression to stage 3 training.

5.2.5. The FFICM Final Structured Oral Examination (SOE) examination

The FFICM Final SOE consists of four 14-minute stations with two structured oral questions asked in each station. Questions are selected to ensure the components of the SOE are balanced and cover as wide an area of the curriculum as possible. The SOE is designed to test the ability of the candidate to logically and succinctly express their knowledge and understanding in a systematic way.

5.2.6. The purpose of the FFICM Final SOE

The FFICM Final SOE is a summative assessment of a candidate's knowledge and understanding of clinical science as applied to the practice of Intensive Care Medicine. As well as knowledge and understanding of the diagnosis, pathophysiology and management of conditions seen in intensive care patients, the SOE also tests clinical decision-making and a candidate's knowledge and understanding of the principles and safety aspects of equipment and techniques that would be used in the practice of Intensive Care Medicine, as well as relevant health systems management. The SOE is taken together with the FFICM Final OSCE and is blueprinted to the FICM curriculum. The candidate is required to pass both exam components before they can be awarded the FFICM by examination.

The SOE complements the OSCE and assessments undertaken in the workplace. When the OSCE and SOE are passed, they provide assurance that candidates have reached the accepted national standard of knowledge and competence to allow progression to stage 3 training.

5.3. Linking curriculum content to the examinations

All types of formative and summative assessments are mapped to the learning outcomes through the assessment blueprint. Within this blueprint each FFICM Final examination (summative) assessment is mapped to the relevant HiLLO.

The syllabus for each examination has been organised with reference to the stage 1 and 2 curriculum and linked to the HiLLOs at the relevant progression point. The exam syllabus provides the trainee and trainers with detailed information on specific areas of Intensive Care Medicine training that is covered by each exam component, to ensure that the expected content of each examination and the standard of performance expected of an examinations candidate is clearly defined and to ensure that progress can be monitored and the appropriate feedback can be reported to candidates and trainers.

5.4. Validity of the examinations

Validity is an important consideration in regard to measuring the quality of an examination and demonstrating that each exam component plays a vital role within the integrated framework of the wider programme of assessment. The GMC guidance 'Designing and maintaining postgraduate assessment programmes,' (General Medical Council, 2017b) states that:

"Validity is seen as the key consideration in current assessment theory."

The validity theory recommended in the GMC assessment document is Kane's Validity Framework (KVF) (Kane, 2013). KVF requires awarding bodies to state the purpose of the examination component within the examinations framework and asks for evidence in regard to the choice, content and format of the examinations, the relationships between the assessments chosen and the overall aim of the examinations.

This strategy document sets out a purpose statement for each exam component used within the FFICM examinations framework. It provides justification and evidence of how the examinations programme and its component levels, work together to ensure the safe management of trainees through a critical progression point within the Intensive Care Medicine training programme, and clearly communicates the levels of performance expected.

The aim of the examinations is to allow doctors to demonstrate their ability to practice Intensive Care Medicine and move through the critical progression point at the end of stage 2 not by passing one examination discipline in isolation but by demonstrating competency across a range of disciplines that act in a mutually complementary way.

As defined in the GMC standards, the examinations must consist of "an integrated set of assessments [...] which are blueprinted against, and supports, the approved curriculum. It may comprise of different methods". To this aim, the components that make up the Final FFICM examination are not only blueprinted to the curriculum, which in itself is an essential tool for examination planning (Crossley et al., 2002) but have also been selected to assess three of the four levels of Miller's pyramid as described earlier in this document (Figure 1).

Whilst the MCQ exams and the SOE exams are aimed at the same levels of Miller's pyramid (knows and knows how), the OSCEs have been designed to test a candidate's knowledge beyond recall and recognition of facts. The structured interaction between examiners and exam candidates at oral examinations allow examiners to explore a number of higher order domains within Bloom's revised taxonomy (Anderson et al., 2001) as adapted in Figure 3, such as; understanding, application of knowledge, analysing and evaluating. These higher-level domains can be tested in an OSCE, but we consider that the SOE examiners can explore a candidate's higher order thinking and understanding of clinical topics and procedures.

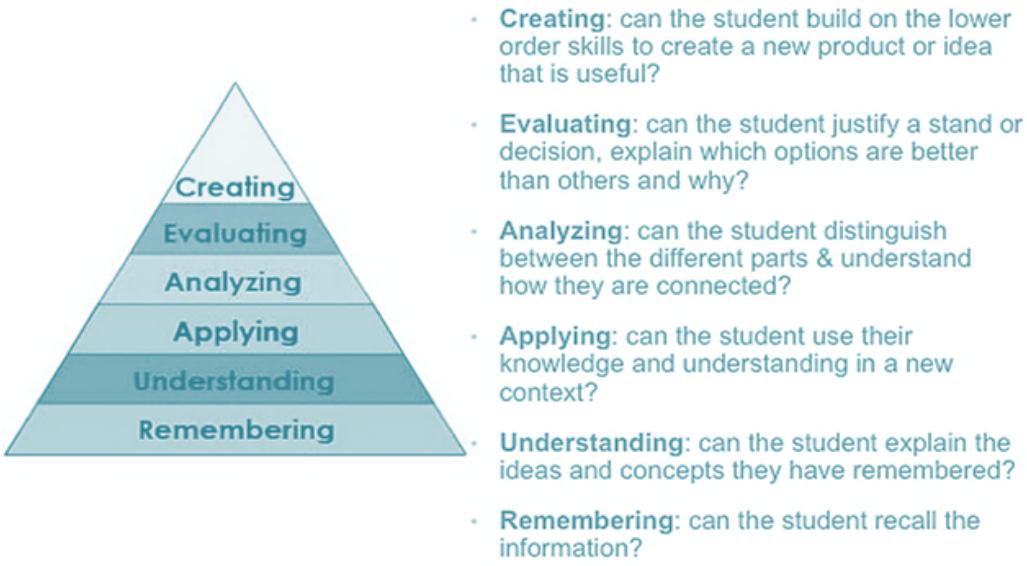

Figure 3. Bloom's Revised Taxonomy (BRT) adapted from Anderson et al. (2001)

5.5. Standard Setting

Standard setting produces a fair pass mark, based on a criterion-referenced standard, not a peer or norm referenced one. The FFICM is a high stakes examination, both for the candidates' own careers and for patient safety. It is therefore important to ensure that the standard for a pass is thoroughly explored and minimum competence firmly established.

The format and structures of FFICM examinations were approved by the GMC in October 2014 and the examinations have continued to be used as a means of ensuring that Intensive Care Medicine trainees have demonstrated they possess the appropriate minimum level of knowledge and skill to progress to the next stage of their training programme. To this aim, the processes that underpin the pass/fail decisions must be robust, consistent and fair and conducted to an agreed standard. The principle of standard setting is to set the pass mark for an exam by determining the minimum level of knowledge or skills that are required to pass that exam.

There are several recognised standard-setting processes used in high stakes medical examinations, and different exam formats lend themselves to different standard-setting formats. The FFICM exams therefore use a mixture of test-centred and examinee-centred standard setting methods.

The cut score for the MCQ is established by the Angoff referencing method (Bandaranayake, 2008). In following best practice, a dedicated Angoff referencing group of examiners and trainers set the pass mark using the Angoff process to achieve an exam cut score and then make a Standard Error of Measurement (SEM) adjustment to arrive at the pass mark. All members of the MCQ Angoff reference group are well trained and have a full understanding of setting the benchmark for a minimally competent candidate before going on to assess MCQ questions.

Post examination and prior to setting the MCQ pass mark, the examiner group carry out an in-depth item analysis to ensure that all questions performed as expected. The examiner group review questions with unexpected performance statistics; if the consensus is the question was problematic or caused ambiguity it is removed from the paper before candidates' scores are finalised. The group make an adjustment to the Angoff cut score of 1 x SEM to determine the final pass mark for the examination.

The pass mark for the OSCE is currently set using a modified Angoff reference method. There are 12 live stations in the OSCE (marks count towards the candidate's score). Stations are marked out of 20; therefore, the maximum score that can be obtained is 240. The OSCE is about overall performance; candidates do not have to pass a predetermined number of

stations. Each question is assigned an Angoff score, applied by an Angoff group of OSCE examiner experts, which is determined before the examination. Angoff scores for each question are aggregated to give the exam pass mark. The OSCE is not an exam that tests clinical knowledge in a narrow sense but assesses competence, knowledge and ability across a wide range of skills.

The pass mark for the SOE is established using the Borderline Regression (BLR) standard setting method. BLR is an effective standard setting method when used in high stakes structured oral examinations. The examiner is face to face with the candidate and can make an honest and informed decision on the level of achievement that should be awarded. Eight examiners independently assess each candidate across the exam, giving marks for performance in question domains and awarding a global score for a candidate's overall performance. This standard setting method uses real exam data that provides reliable results and can identify problems with an SOE question.

All standard setting methods used across the FICM programme of examinations are widely used by medical royal colleges and faculties to set a fair pass mark (Academy of Medical Royal Colleges, 2015). The internal reliability of the exams, even though they suffer from small cohorts, consistently achieve a test-retest reliability figure within the good/acceptable range. All examiners undertake regular training and carry out standard setting benchmarking exercises to ensure consistency in the marks awarded. A number of examiners take part in the assessment of a candidate in the clinical examinations, which contributes positively towards the reliability of exams (Van der Vleuten and Swanson, 1990).

5.6. Fairness

The fairness of an exam refers to its freedom from any kind of bias. To this end and in the exercising of its duties under the Equality Act 2010, the Faculty give due regard to:

- eliminate discrimination, harassment, victimisation and any other unacceptable conduct;
- advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;
- foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

In its regard for these duties the FICM aims to ensure that everyone has equal opportunity to demonstrate their ability and that no one is treated less favourably than another on grounds of race, disability, sex, transgender, sexual orientation, age, religion, or pregnancy and maternity.

To ensure Faculty exams do not disadvantage any candidate, or group of candidates, on any basis other than the candidate's lack of the knowledge and skills the exam is designed to measure, all Faculty question writers take particular care in the writing and wording of questions to avoid ambiguity or offence across cultures. Examiners seek advice from specific experts, organisations and associations, or the experience of individuals in the workplace, on topics that affect particular ethnicities or cultures to gain a greater understanding of the potential effects of a question scenario on different people.

Throughout the examination process, feedback from candidates on the examination process and its content is encouraged. Such forms of engagement assist us in gaining a viewpoint regarding some of the protected characteristics not reflected in the diversity of our examiner groups.

The Faculty monitor the court of examiners with regards to their diversity, which in turn goes some way to ensuring our exams are as fair as they can be. Trainers, lay members and external experts visit the exams to observe. Their feedback is encouraged and assists in increasing our understanding and appreciation of the exams from different stakeholders who share protected characteristics. However, the protected characteristics and cultures listed in the 2011 census is as it is intended to be, very diverse and it would be impossible to engage with everyone on every decision.

5.7. Reasonable adjustments

The Faculty considers reasonable adjustments for exam candidates with a disability, as set out in the examination regulations. Special arrangements for pregnancy and temporary medical conditions are also provided where necessary. Full details are available in Appendix 4 of the FICM examinations regulations.

5.8. Equality analysis

Equality analysis is an integral part of examination policy, content and practice development. The Faculty carries out objective, evidence-based equality analysis when making decisions relating to exam changes, policies, question writing and practices. This ensures that full consideration is given to the effect that such decisions may have on the fairness of the exam and aims to prevent discrimination, promote diversity and inclusivity for all groups of people.

5.9. Quality assurance

A full person specification and job description is provided for examiners. The FFICM examiner appointment and selection regulations give full details of all parts of the selection and appointment process used by the FICM. Examiner training is mandatory for new examiners and regular training sessions are held for existing examiners.

The FFICM exams do not currently use lay examiners, although lay input is encouraged through attendance at committees and working groups. Specific examiner training is provided to all examiners, which includes the principles of assessment and taking part in mock exams. All examiners are regularly appraised and audited throughout their term of examinership.

FFICM examiners are experienced consultants, and the Faculty is fortunate in that the majority of examiners are able to commit to at least 6 days examining per year, with the vast majority of examiners committing to a 10-year term. This ensures consistency in the court of examiners and gives all examiners regular exposure to examining and the examination process.

All examiners are expected to undertake an annual exam-specific training session that is arranged by the examinations department. The training varies from presentations, workshops and e-learning sessions, all of which are designed in-house and specific to the assessment methods used by the FICM.

5.10. Feedback

The Faculty believes it is important to provide feedback to candidates beyond a standard pass-fail result to assist them in understanding and interpreting their overall result. The Faculty does not attempt to justify the result given or the marks awarded, whether overall or for specific sections or skill domains. Marks are awarded using strict guidelines. The court of examiners decision on the marks awarded are final and therefore papers cannot be remarked.

Candidate feedback should not be confused with candidate guidance:

a) Feedback is the provision of information relating to performance.
b) Guidance relates to the action taken in relation to certain information about performance.

The first form of feedback on a candidate's performance is given in the form of a pass-fail list. The pass-fail lists are published on the exam pages of the Faculty website at a pre-announced date and time. The period between the exam date and the release of results date will vary for each exam component and it will depend on the standard setting and marking methods used to confirm results.

Further feedback is then provided to candidates in the form of a 'results letter'. The type of feedback given to candidates will vary according to the exam component attempted. However, the Faculty has ensured that the feedback provided meets the AoMRC and GMC's guidelines and is in line with other medical royal colleges. All candidates, whether they pass

or fail an examination will receive the same type of feedback through their results letter. This is because the Faculty believes that the provision of numerical information about a candidate's exam performance not only assists with improving a candidate's performance at future examinations but also provides important information on which to base further continuing professional development.

The following feedback is provided on all exam results letters/feedback enclosures:

- Confirmation of the candidate's pass-fail result
- Confirmation of the number of attempts used/maximum number of attempts
- The examination pass mark as a raw score in relation to the maximum achievable test score (e.g. 315/420) and/or the percentage value (e.g. 75%)
- The candidate's overall score as a raw score and/or as a percentage

In addition, candidates who sit the FFICM Final MCQ examination receive a full breakdown of question performance against the areas of the curriculum/syllabus tested in the exam. Candidates who sit the OSCE are given a breakdown of the score they achieved in each station. Candidates who sit the SOE are given their score for each question and are provided with examiner comments made on their performance.

The Faculty believes it is necessary to provide more detailed feedback to candidates and their trainers where a candidate's performance at OSCE and/or SOE examinations is poor or causes concern. This feedback, along with suggested additional educational support which could be provided, will be sent in the form of a letter to the candidate's tutor or senior ICM consultant and copied to the candidate concerned. This letter is designed to bring the trainer and candidate together to discuss poor performance and areas of concern and agree additional educational training that can be put in place before the next attempt.

5.11. Monitoring and reviewing

The Faculty monitors pass rates of candidate cohorts and various group levels including, but not limited to, ethnicity, trainees, non-trainees, number of attempts and deanery/schools. We are continuing to ensure that our examinations are in line with GMC expectations, and considerations are constantly being expanded to identify possible instances of differential attainment.

Ethnic differences in attainment are a consistent feature of medical education in the UK, being present across medical schools, exam types, and undergraduate and postgraduate assessments. The Faculty has an agreement in place with the GMC and provides line-by-line candidate data via the GMC connect portal on an annual basis. This information is used to monitor the differential attainment gap of all medical royal college and faculty high stakes examinations. The Faculty is not an outlier in this respect and the differential attainment gap seen in FFICM exams remains in line with the majority of other medical royal colleges and faculties.

The Chairman's exam reports are published on the FICM website following each exam and provide information on candidate numbers, pass rates, internal reliability figures and updates on exam processes.

There are templates and style guides available to examiners who are undertaking question writing. All questions submitted undergo a comprehensive approval and acceptance process, which is managed by the relevant subject-expert core group.

The FFICM examinations subcommittee is continually in the process of conducting in-house reviews of the examinations structure, standard setting methods and the processes, policies and regulations we use to ensure that our exams are as robust, valid, fair and up to date as possible.

6. Identifying and rectifying poor performance

The programme of assessment (Table 2) ensures trainees and trainers are aware of the requirements for progression on a yearly basis and at key progression points. This presents an opportunity to highlight when trainees have not yet achieved the necessary standard for progression. Furthermore, the capability levels allow trainers to monitor the trainees' level of performance against the expected level of performance for the stage of training (see Appendix).

In addition to the above, Educational Supervisors and trainees have a shared responsibility to raise concerns regarding expected performance well before the key progression points and regions should make clear the process of ARCP at the start of the training year to avoid the impression of last-minute hurdles.

Regions are required to have systems in place (for example interim Educational Supervisor meetings) to highlight where trainees are not progressing as expected. Steps to rectify the situation are then taken by the Educational Supervisor to support the trainee and ensure patient safety depending on the difficulty encountered. Those involved in supervision of trainees are aware of local policies for supporting trainees in difficulty.

As described earlier, the FICM programme of assessment allows trainers to make valid judgements of professional performance. However, it is essential that trainers and supervisors adequately document their rationale for judgements made during ES meetings and at ARCP, especially when performance falls below the standard expected. Inferences about professional competence need to be credible and defensible, based on trustworthy evidence (Gingerich et al., 2014). Guidance is made available by the Faculty to all involved in this process in the curriculum handbook.

7. Monitoring and Reviewing

7.1. Quality Assurance

The Faculty have a robust system of monitoring the quality of the assessment programme.

- Recruitment data is collected, and trainee performance analysed each year via a trainee performance tracker. This displays outcomes in ARCP performance and exam performance in relation to interview score, region and core and partner specialty. This allows the Faculty to assess how the assessment process works for trainees of varying ability and different core programme experience and highlights inequalities within these areas.
- Written examinations are monitored to ensure quality and equality as detailed in the FICM examinations section. Annual reports including the quality performance metrics are published by the Faculty and made available to the public each year.
- A Quality Management of Training Report is published yearly by the Faculty collating multiple sources of feedback including results from the FICM and GMC trainee surveys and surveys from Regional Advisors. This is available to the public. Issues relating to assessment both in the workplace or written examinations can be reviewed and acted upon by FICM's Training, Assessment and Quality Committee.
- Quality of assessors and supervisors in the workplace is ensured in collaboration with Deaneries/HEE Local Offices via formal training relating to use of assessment tools and via strict criteria for the appointment of trainers (as detailed in the curriculum's, 'Supervision and Feedback' section).
- The Faculty are working to improve monitoring of the quality of formative assessments. A system for reviewing SLE evidence is being considered alongside the implementation of a new ePortfolio. This should allow feedback to training regions and supervisors where appropriate, including sharing of good practice in assessment as well as rectifying poor performance. It also encourages better standardisation between Deaneries/HEE Local Offices and will allow the Faculty to review the validity of the current SLEs, considering not only theoretically how they are designed and implemented, but how they are used in practice (and furthermore how this evidence is used to support the ES and ARCP panels).

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9. Appendix

9.1. Assessment blueprint

HiLLO Number	High-Level Learning Outcomes (HiLLOs)	SLEs and MSF					ES Report	FFICM Examinations		
		ACAT	CBD	Mini-CEX	DOPS	MSF		MCQ	OSCE	SOE
1	The doctor will be able to function successfully within NHS organisational and management systems whilst adhering to the appropriate legal and ethical framework.	✓	✓			✓	✓	✓		✓
2	The doctor will be focused on patient safety and will deliver effective quality improvement, whilst practising within established legal and ethical frameworks.	✓	✓	✓	✓	✓	✓	✓		✓
3	An Intensive Care Medicine specialist will know how to undertake medical research including the ethical considerations, methodology and how to manage and interpret data appropriately.	✓	✓				✓	✓	✓	✓
4	To ensure development of the future medical workforce, a doctor working as a specialist in Intensive Care Medicine will be an effective clinical teacher and will be able to provide educational and clinical supervision.	✓				✓	✓		✓	✓
5	Doctors specialising in Intensive Care Medicine can identify, resuscitate and stabilise a critically ill patient, as well as undertake their safe intra-hospital or inter-hospital transfer to an appropriately staffed and equipped facility.	✓	✓	✓	✓		✓	✓	✓	✓

HiLLO Number	High-Level Learning Outcomes (HiLLOs)	SLEs and MSF					ES Report	FFICM Examinations		
		ACAT	CBD	Mini-CEX	DOPS	MSF		MCQ	OSCE	SOE
6	Intensive Care Medicine specialists will have the knowledge and skills to initiate, request and interpret appropriate investigations and advanced monitoring techniques, to aid the diagnosis and management of patients with organ systems failure. They will be able to provide and manage the subsequent advanced organ system support therapies. This will include both pharmacological and mechanical interventions.	✓	✓	✓	✓		✓	✓	✓	✓
7	Specialists in Intensive Care Medicine can provide pre-operative resuscitation and optimisation of patients, deliver post-operative clinical care including optimising their physiological status, provide advanced organ system support and manage their pain relief.	✓	✓	✓	✓		✓	✓	✓	✓
8	Doctors specialising in Intensive Care Medicine will understand and manage the physical and psychosocial consequences of critical illness for patients and their families, including providing pain relief, treating delirium and arranging ongoing care and rehabilitation. They will also manage the withholding or withdrawal of life-sustaining treatment, discussing end of life care with patients and their families and facilitating organ donation where appropriate.	✓	✓	✓	✓		✓	✓	✓	✓
9	Intensive Care Medicine specialists will have the skillset and competence to lead and manage a critical care service, including the multidisciplinary clinical team and providing contemporaneous care to a number of critically ill patients.	✓	✓			✓	✓	✓	✓	✓
10	Intensive Care Medicine specialists will have developed the necessary skills of induction of anaesthesia, airway control, care of the unconscious patient and understanding of surgery and its physiological impact on the patient.		✓	✓	✓	✓	✓	✓	✓	

HiLLO Number	High-Level Learning Outcomes (HiLLOs)	SLEs and MSF					ES Report	FFICM Examinations		
		ACAT	CBD	Mini-CEX	DOPS	MSF		MCQ	OSCE	SOE
11	In order to manage acutely ill patients outside the Intensive Care Unit, an Intensive Care Medicine specialist will have the diagnostic, investigational and patient management skills required to care for ward-based patients whose condition commonly requires admission to the intensive care unit.	✓	✓	✓	✓	✓	✓	✓	✓	✓
12	Doctors specialising in Intensive Care Medicine understand the special needs of, and are competent to manage patients with neurological diseases, both medical and those requiring surgery, which will include the management of raised intracranial pressure, central nervous system infections and neuromuscular disorders.	✓	✓	✓	✓		✓	✓	✓	✓
13	A specialist in adult Intensive Care Medicine is competent to recognise, provide initial stabilisation and manage common paediatric emergencies until expert advice or specialist assistance is available. They are familiar with legislation regarding safeguarding children in the context of Intensive Care Medicine practice.	✓	✓	✓	✓		✓	✓	✓	✓
14	Intensive Care Medicine specialists recognise the special needs of, and are competent to provide the perioperative care to patients who have undergone cardiothoracic surgery, including providing pain relief and advanced organ system support utilising specialised techniques available to support the cardiovascular system.	✓	✓	✓	✓		✓	✓	✓	✓

9.2. Special Skills Modules: Assessment Blueprint

SSY Modules	Aims	SLEs and MSF					ES Report	SSY Specific Tools		
		ACAT	CBD	Mini-CEX	DOPS	MSF		SSY Unique Assessments	Notes	Logbook requirement*
Academic Research	*Equip individuals with the competencies to deliver multicentre clinical research within their critical care units following appointment as NHS consultants, and also initiate local research, if individual aspirations and local resources support this*			✓		✓	✓	PbD Viva Voce	Requires proof of completion of application for funding, GCP certificate, presentation at national research meeting	✓
Cardiothoracic Intensive Care Medicine	*Equip individuals with the competencies required to work as a consultant in a specialist cardiothoracic intensive care unit*	✓	✓	✓	✓	✓	✓	Simulation (where available)	Additional training in echocardiography is encouraged but not assessed as part of this SSY	
Echocardiography	*To train an individual to echocardiography competence at either: BSE Level II ACCE (critical care echocardiography) or BSE Level I accreditation and to equip an individual with the knowledge, skills and attitudes to be clinical lead for echocardiography on a critical care unit*	✓	✓	✓	✓	✓	✓	Completion of BSE level 1 or 2 requires a formal practical assessment held by the BSE - see notes	Completion of the MCQ examination (for level 2) or practical assessment (level 1/2) is not required for progression providing the learning outcomes have been met	✓* *requirements vary between Level I and Level II BSE accreditation
ECMO (Extra-Corporeal Membrane Oxygenation)	*To equip an individual with the knowledge and skills to provide ECMO as part of a team in a specialist Critical Care Unit*	✓	✓	✓	✓	✓	✓	Simulation (where available)		✓ Logbook of procedures (mandated number for completion of SSY)

SSY Modules	Aims	SLEs and MSF					ES Report	SSY Specific Tools		
		ACAT	CBD	Mini-CEX	DOPS	MSF		SSY Unique Assessments	Notes	Logbook requirement*
Home Ventilation	*To train an individual in the management of patients with respiratory failure who require domiciliary ventilatory support.*	✓	✓	✓	✓	✓	✓	Patient satisfaction survey* *(either GMC or BTS approved tool)		
Neuro Intensive Care Medicine	*Consultant Intensive Care Medicine doctors with subspecialty training in NICM have a central role in neuro intensive care units. They share the ultimate responsibility of care with the admitting clinical teams and they collaboratively lead the provision of neuro intensive care, coordinating a multi-specialty team of physicians, surgeons and allied health professionals including specialised nurses, physiotherapists, neurophysiologists and clinical scientists.*	✓	✓	✓	✓	✓	✓	Simulation (where available)		

SSY Modules	Aims	SLEs and MSF					ES Report	SSY Specific Tools		
		ACAT	CBD	Mini-CEX	DOPS	MSF		SSY Unique Assessments	Notes	Logbook requirement*
Paediatric Intensive Care Medicine	*To allow a doctor who is unsuccessful in securing appointment to the PICM sub-specialty or who does not wish to specialise in PICM, the opportunity to further develop the depth and breadth of their paediatric ICM skills. This would facilitate a level of capability commensurate with being the paediatric ICM Lead in a non-specialist hospital but would not equip the doctor as a PICM specialist recognized by the GMC*	✓	✓	✓	✓	✓	✓		This would facilitate a level of capability commensurate with being the paediatric ICM Lead in a non-specialist hospital but would not equip the doctor as a PICM specialist recognised by the GMC	
Pre-Hospital Emergency Medicine	*Intensivists with appropriate prior expertise may apply via competitive national application for PHEM sub-specialty training (via IBTPHEM)*	See IBTPHEM curriculum								
Quality Improvement in Healthcare	*This module covers the competences required to adopt a logical, scientific and analytical approach to quality improvement. It encourages the development of leadership skills to allow trainees a platform to influence change in future practice. It aims to develop expertise to share with other members of the healthcare team.*	✓	✓	✓	✓	✓	✓		Although further professional accreditation (e.g. FMLM fellowship) is encouraged, it is not a requirement for completion of the year	✓

SSY Modules	Aims	SLEs and MSF					ES Report	SSY Specific Tools		
		ACAT	CBD	Mini-CEX	DOPS	MSF		SSY Unique Assessments	Notes	Logbook requirement*
Transfer Intensive Care Medicine	*This module covers the competences required to make transfer decisions, select the most appropriate transport platform, provide safe, effective and focused in-transit critical care and ensure that the patients' condition and immediate needs are communicated to receiving hospital clinical staff.*	✓	✓	✓	✓	✓	✓		An audit of transfer standards locally or at a regional or network level is required. A number of relevant courses / accreditations may be beneficial but not required e.g. CCAT, DipIMC	
Education	*This special skills module is intended for trainees who are considering developing a special interest in medical education in their consultant career. It intends to further a trainee's professional development as an educator through taking part in a wide variety of educational activities, self-evaluation and utilising frameworks in which to describe their own development as a trainer.*	✓	✓	✓	✓	✓	✓	Peer-observed teaching practice		

*** SSY specific logbook requirement** – The SSY modules that require a specific logbook are identified above but please note that as these modules fall within stage 2 of ICM training, the standard curriculum requirements still apply and that includes maintaining a logbook of clinical procedures as a minimum.

Abbreviations:

ACCE: Adult Critical Care Echocardiography

BSE: British Society of Echocardiography

BTS: British Thoracic Society

CCAT: Clinical Considerations in Aero Medical Transport

DipIMC: Diploma in Immediate Medical Care

ECMO: Extra-Corporeal Membrane Oxygenation

FMLM: Faculty of Medical Leadership and Management

GMC: General Medical Council

IBTPHEM: Intercollegiate Board for Training in Pre-Hospital Emergency Medicine

NICM: Neuro Intensive Care Medicine

PbD: Project based Discussion

9.3. Capability Level Descriptors

Level	Task orientated capability	Knowledge orientated capability	Patient management capability
1	Performs task under direct supervision.	Very limited knowledge; requires considerable guidance to solve a problem within the area.	Can take history, examine and arrange investigations for straight forward case (limited differential diagnosis). Can initiate emergency management and continue a management plan, recognising acute divergences from the plan. Will need help to deal with these.
2	Performs task in straightforward circumstances, requires help for more difficult situations. Understands indications and complications of task.	Sound basic knowledge; requires some guidance to solve a problem within the area. Will have knowledge of appropriate guidelines and protocols.	Can take history, examine and arrange investigations in a more complicated case. Can initiate emergency management. In a straightforward case, can plan management and manage any divergences in short term. Will need help with more complicated cases.
3	Performs task in most circumstances, will need some guidance in complex situations. Can manage most complications, has a good understanding of contraindications and alternatives.	Advanced knowledge and understanding; only requires occasional advice and assistance to solve a problem. Will be able to assess evidence critically.	Can take history, examine and arrange investigations in a more complex case in a focused manner. Can initiate emergency management. In a most cases, can plan management and manage any divergences. May need specialist help for some cases.
4	Independent (consultant) practice.	Expert level of knowledge.	Specialist.

9.4. Target capability levels for stage of training

HiLLO Number	High-Level Learning Outcomes (HiLLOs) - Intensive Care Medicine	Expected capability level by end of:		
		Stage 1	Stage 2	Stage 3
1	The doctor will be able to function successfully within NHS organisational and management systems whilst adhering to the appropriate legal and ethical framework.	2	3	4
2	The doctor will be focused on patient safety and will deliver effective quality improvement, whilst practising within established legal and ethical frameworks.	2	4	4
3	An Intensive Care Medicine specialist will know how to undertake medical research including the ethical considerations, methodology and how to manage and interpret data appropriately.	2	3	4
4	To ensure development of the future medical workforce, a doctor working as a specialist in Intensive Care Medicine will be an effective clinical teacher and will be able to provide educational and clinical supervision.	2	3	4
5	Doctors specialising in Intensive Care Medicine can identify, resuscitate and stabilise a critically ill patient, as well as undertake their safe intra-hospital or inter-hospital transfer to an appropriately staffed and equipped facility.	2	3	4
6	Intensive Care Medicine specialists will have the knowledge and skills to initiate, request and interpret appropriate investigations and advanced monitoring techniques, to aid the diagnosis and management of patients with organ systems failure. They will be able to provide and manage the subsequent advanced organ system support therapies. This will include both pharmacological and mechanical interventions.	2	3	4
7	Specialists in Intensive Care Medicine can provide pre-operative resuscitation and optimisation of patients, deliver post-operative clinical care including optimising their physiological status, provide advanced organ system support and manage their pain relief.	2	3	4
8	Doctors specialising in Intensive Care Medicine will understand and manage the physical and psychosocial consequences of critical illness for patients and their families, including providing pain relief, treating delirium and arranging ongoing care and rehabilitation. They will also manage the withholding or withdrawal of life-sustaining treatment, discussing end of life care with patients and their families and facilitating organ donation where appropriate.	2	3	4
9	Intensive Care Medicine specialists will have the skillset and competence to lead and manage a critical care service, including the multidisciplinary clinical team and providing contemporaneous care to a number of critically ill patients.	2	3	4
10	Intensive Care Medicine specialists will have developed the necessary skills of induction of anaesthesia, airway control, care of the unconscious patient and understanding of surgery and its physiological impact on the patient.	2	3	3

HiLLO Number	High-Level Learning Outcomes (HiLLOs) - Intensive Care Medicine	Expected capability level by end of:		
		Stage 1	Stage 2	Stage 3
11	In order to manage acutely ill patients outside the Intensive Care Unit, an Intensive Care Medicine specialist will have the diagnostic, investigational and patient management skills required to care for ward-based patients whose condition commonly requires admission to the intensive care unit.	3	3	3
12	Doctors specialising in Intensive Care Medicine understand the special needs of, and are competent to manage patients with neurological diseases, both medical and those requiring surgery, which will include the management of raised intracranial pressure, central nervous system infections and neuromuscular disorders.	1	3	3
13	A specialist in adult Intensive Care Medicine is competent to recognise, provide initial stabilisation and manage common paediatric emergencies until expert advice or specialist assistance is available. They are familiar with legislation regarding safeguarding children in the context of Intensive Care Medicine practice.	1	3	3
14	Intensive Care Medicine specialists recognise the special needs of, and are competent to provide the perioperative care to patients who have undergone cardiothoracic surgery, including providing pain relief and advanced organ system support utilising specialised techniques available to support the cardiovascular system.	1	3	3

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